

CLAIMS

1. A temperature indicating display device comprising an information recording film layer having information recorded therein and a temperature detecting agent layer containing a substance of which a state shifts dependently on temperature, wherein the state of substance in the temperature detecting agent layer shifts upon undergoing a predetermined temperature, so as to change a display of the information recorded in the information recording film layer.

2. The temperature indicating display device as claimed in claim 1, wherein the substance of which the state shifts dependently on temperature contained in the temperature detecting agent layer is a substance that melts at a predetermined temperature or higher.

3. The temperature indicating display device as claimed in claim 2, wherein a substance forming a recording film of the information recording film layer is a substance that melts or disperses into the melted state of which the state shifts dependently on temperature contained in the temperature detecting agent layer.

4. The temperature indicating display device as claimed in claims 1 to 3, wherein the substance of which the state shifts dependently on temperature in the temperature detecting agent layer comprises at least one heat melting agent selected from the group consisting of a paraffin, a higher fatty acid, a higher fatty acid ester and a higher alcohol.

5. The temperature indicating display device as claimed in claim 1, wherein the substance of which the state shifts dependently on temperature contained in the temperature detecting agent layer comprises two or more substances forming a heterogeneous phase, which becomes a homogeneous phase to change a light transmittance at a predetermined temperature or higher.

6. The temperature indicating display device as claimed in claims 1 to 5, wherein the temperature detecting agent layer is adjacent to the information recording film layer.

7. The temperature indicating display device as claimed in claims 1 to 4, wherein the temperature indicating display device further comprises a diffusion layer.

8. The temperature indicating display device as claimed in claim 7, wherein the diffusion layer comprises a porous substance.

9. The temperature indicating display device as claimed in claim 7 or 8, wherein the diffusion layer comprises a paper.

10. The temperature indicating display device as claimed in claim 7 to 9, wherein the diffusion layer is disposed between the information recording film layer and the temperature detecting agent layer.

11. The temperature indicating display device as claimed in claims 1 to 10, wherein the substance of which the state shifts dependently on temperature contained in the temperature detecting agent layer is placed in a separator having a concave shape on a central part thereof.

12. The temperature indicating display device as claimed in claims 1 to 11, wherein the temperature indicating display device is in a form of a sticker.

13. The temperature indicating display device as claimed in claims 1 to 12, wherein the temperature indicating display device further comprises an adhesive layer and is capable of being attached.

14. A temperature indicating device comprising a temperature detecting agent placing part having a substance of which the state shifts dependently on temperature therein, and a diffusion layer is disposed to touch the placing part.

15. The temperature indicating device as claimed in claim 14, wherein the substance of which the state shifts dependently on temperature set in the temperature detecting agent placing part is a substance that melts at a predetermined temperature or higher, and a substance forming a recording film of an information recording film layer comprises a

substance that melts or disperses into a melted state of which the state shifts dependently on temperature placed in the temperature detecting agent placing part.

16. The temperature indication device as claimed in claim 14 or 15, wherein the temperature detecting agent placing part has a barrier layer.

17. A temperature indicating display device comprising a structure wherein at least a part of the diffusion layer of the temperature indicating display as claimed in claim 14 or 15 touches a part of an information recording film layer of an information display member having an information recording film layer and the temperature detecting agent is capable of flowing or permeating into the information recording film layer through the diffusion layer upon melting the agent.

18. The temperature indicating display device as claimed in claim 17, wherein the temperature indicating device as claimed in claims 14 or 15 and the information display member having the information recording film layer are totally covered with a transparent protective sheet.

19. A temperature detecting agent being capable of forming the temperature detecting agent layer comprising a substance of which the state shifts dependently on temperature in the temperature indicating display device as claimed in claims 1 to 18.

20. The temperature detecting agent as claimed in claim 19, wherein the temperature detecting agent is at least one kind of a heat melting agent selected from the group consisting of paraffin, a higher fatty acid, a higher fatty acid ester and a higher alcohol.

21. A container comprising the temperature indicating display device as claimed in one of claims 1 to 13 and claims 17 to 18.

22. The container as claimed in claim 21, wherein the container is a food container.

23. The container as claimed in claim 21, wherein the container is a packing container.

24. The container as claimed in claim 21, wherein the container is a transporting container.

25. A temperature indicating display label comprising a substrate, a separator containing a temperature detecting agent layer containing a substance of which the state shifts dependently on temperature, and an information record holding layer containing an information recording layer having information recorded therein.

26. The label as claimed in claim 25, wherein the information record holding layer comprises a transparent material.

27. The label as claimed in claim 25 or 26, wherein the separator comprises a transparent material.

28. The label as claimed in claims 25 to 27, wherein the temperature detecting agent layer contained in the separator and the information recording film layer recorded in the information recording holding layer are adjacent to each other.

29. The label as claimed in one of claims 25 to 28, wherein the label further comprises a porous plate capable of forming a diffusion layer.

30. The label as claimed in one of claims 25 to 29, wherein the label further comprises an adhesive layer on a back surface of the substrate, whereby the label is capable of being adhered.

31. The label as claimed in one of claims 25 to 30, wherein the label further comprises a protective plate.

32. The label as claimed in one of claims 25 to 31, wherein information of the information recording film layer is printing.

33. A laminated body comprising layers comprising a temperature detecting agent layer containing a substance of which the state shifts dependently on temperature, an information recording film layer, and an information record holding layer.

34. The laminated body as claimed in claim 33, wherein the laminated body further comprises a diffusion layer between the information recording film layer and the temperature detecting agent layer.